

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**  
**BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

Applicants : Liu and Liu  
U.S. Serial No. : 10/593,701  
Confirmation No. : 3093  
Filed : September 19, 2006  
Examiner : Hao D. Mai  
Art Unit : 3732  
For : FLEXIBLE DENTAL FLOSS APPLICATOR AND  
INTERDENTAL GUM STIMULATOR

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Commissioner for Patents  
P.O. Box 1450  
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**APPELLANT BRIEF ON APPEAL PURSUANT TO 37 CFR § 41**

A Final Office Action for the above-referenced application was mailed April 7, 2009. A Notice of Appeal was filed on July 27, 2009, and a Notice of Panel Decision from Pre-Appeal Brief Review ("Notice") was mailed on August 26, 2009. The time period for filing an appeal brief is one month from the mailing of the Notice, or the balance of the two-month time period running from the receipt of the notice of appeal, whichever is greater. Hence, an Appeal Brief is now due on September 27, 2009. Accordingly, this Appeal Brief is being timely filed. If any fee is required, authorization is hereby given to charge the amount of any such fee to Deposit Account No. 50-1891.

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### **I. REAL PARTY IN INTEREST**

The real parties in interest are Wai-Kuen Lui and William Wai-Shing Lui.

### **II. RELATED APPEALS AND INTERFERENCES**

No appeals or interferences have been filed to the knowledge of the Appellants, Applicants' undersigned attorney, or the assignee that are related to or would be affected by a decision by the Board of Patent Appeals and Interferences in this pending appeal.

### **III. STATUS OF CLAIMS**

Claims 22, 24-41 are rejected.

### **IV. STATUS OF AMENDMENTS**

An amendment subsequent to final rejection was filed June 2, 2009. In the Advisory Action mailed June 4, 2009, the examiner indicated that the request for reconsideration has been considered but did not place the application in condition for allowance.

### **V. SUMMARY OF CLAIMED SUBJECT MATTER**

The present invention provides a dental floss applicator and interdental stimulator that is flexible (*see* page 13, lines 1-19; Figures 1 and 3). Users can adjust the angle of the dental floss applicator into a configuration that best suits their particular needs. When flex adjusted, the applicator is able to hold its new configuration while maintaining sufficient strength to allow the user to comfortably maneuver the apparatus to properly floss the teeth or stimulate the gums (*see* page 14, line 15 to page 16, line 6; Figures 2 and 11).

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Claim 22 is drawn to a dental hygiene apparatus, comprising: (a) an elongated handling means; (b) a teeth-cleaning means comprising arms that secure one or more lengths of interdental material, wherein the interdental material is oriented longitudinally as related to the longitudinal axis of the handling means; and (c) a flexible means between the teeth-cleaning means and the handling means, wherein the flexible means is integral with the teeth-cleaning means and the handling means and the flexible means is pliable (*see e.g.* Figures 1-3, 11).

Claim 31 is drawn to a dental hygiene apparatus, comprising: (a) an elongated handle; (b) a cleaning head comprising two arms that secure one or more lengths of interdental material, wherein the interdental material is oriented longitudinally as related to the longitudinal axis of the handle; and (c) a flexible elbow between the cleaning head and the handle, wherein the flexible elbow is integral with the cleaning head and the handle and the flexible elbow is pliable (*see e.g.* Figures 1-3, 11).

#### **VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL**

Whether claims 22, 24-27 and 31-38 are unpatentable under 35 U.S.C. 103(a) as being unpatentable over Maloney (U.S. Pat. No. 3,533,420) in view of Chodorow et al. (U.S. Pub. No. 2005/0217692).

Whether claims 28-30 and 39-41 are unpatentable under 35 U.S.C. 103(a) as being unpatentable over Maloney (U.S. Pat. No. 3,533,420) in view of Chodorow et al. (U.S. Pub. No. 2005/0217692), and further in view of Gordon (U.S. Pat. No. 5,184,719).

## VII. ARGUMENT

A. Rejection Under 35 U.S.C. 103(a) over Maloney (U.S. Pat. No. 3,533,420) in view of Chodorow et al. (U.S. Pub. No. 2005/0217692)

Claims 22, 24-27 and 31-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maloney (U.S. Pat. No. 3,533,420) in view of Chodorow et al. (U.S. Pub. No. 2005/0217692).

A1. Claims 22, 24-27

In the Advisory Action mailed June 4, 2009, the Examiner contended that:

As for the claimed limitation "pliable so that the interdental material can be bought laterally, to either side of the longitudinal axis of the handling means to have an about 90 degrees angle... ", Maloney already discloses such limitation(s).

Applicants respectfully traverse. Applicants submit that the Examiner has failed to provide any evidence that indicates Maloney directly or indirectly teaches the above limitation. Independent claim 22 of the present application recites an apparatus comprising:

a flexible means ... wherein ... the flexible means, the teeth-cleaning means and the handling means are of one construction, and the flexible means is pliable so that the interdental material can be brought laterally to either side of the longitudinal axis of the handling means to have an about 90 degrees angle between the interdental material and the longitudinal axis of the handling means.

In contrast, Maloney teaches:

[a]n adjustable connection is formed between head 60 and handle 62 enabling them to be adjusted into various preselected angles ... this adjustable connection includes a small hinge 64 connected between head 60 and handle 62 to enable them to be moved about the hinge pin 66 into a desired angular relationship. Hinge pin 66 is a head screw whose threads are engaged in corresponding threads in the eyes of the hinge so that upon advancement of the hinge pin, the hinge may be secured against movement with the head and handle in the desired relative positions. (see column 2, lines 62-75)

Hence, Maloney only teaches the threads of the head screw engage the corresponding threads in the eyes of the hinge so as to secure or fix the angle of the hinge. Maloney does not provide any teaching on the range of movement allowed by such head screw 66 functioning as a hinge pin. More

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specifically, Maloney does not teach or suggest such hinge pin would allow a 90-degree lateral movement to either side of the handling means as claimed herein. Instead, in view of the teaching that "[h]inge pin 66 is a head screw whose threads are engaged in corresponding threads in the eyes of the hinge so that upon advancement of the hinge pin, the hinge may be secured", one of ordinary skill in the art would reasonably conclude that such hinge would only allow less than 90-degree lateral movement.

In the Advisory Action mailed June 4, 2009, the Examiner also contended that:

Maloney discloses the flexible means 64/66 substantially as claimed except for the flexible means being of one construction (i.e. monolithically integral) with the teeth cleaning means and the handling means; nevertheless, it would have been obvious to substitute such flexible means 64/66 of Maloney with a well known monolithically integral living hinge ... such as that (22) shown by Chodorow in Figure 2 ... Such modification is merely a substitution of similar well known interchangeable mechanisms that would yield the same and/or predictable results.

Applicants submit that Maloney does not disclose the flexible means 64/66 substantially as claimed herein. As discussed above, the design and operation of Maloney's hinge are different and distinct from that of the present invention. Maloney teaches a hinge that has a lesser range of movement and requires tightening of screw to fix the angle of the hinge, whereas the flexible means of the present invention has a simpler operating mechanism that allows a greater range of movement.

Neither do Chodorow et al. teach or suggest a flexible means that would allow 90-degree lateral movement to either side of the handling means as claimed herein. As shown in Figures 5-7, Chodorow teaches a hinge that would only allow at the most 45-degree movement. Furthermore, the hinge of Chodorow et al. would not allow movement to either side of the handling means as claimed herein due to the construction and operation of the hinge. Chodorow's invention requires a projection from the handle that acts as a latch to lock the flosser head in a bent orientation (see paragraphs [0010], [0011], [0014]-[0018], and [0059]). As a result, the hinge of Chodorow's device would only permit movement to one, not both, side of the handling means. In other words, the flexible means of the present invention is different and distinct from the hinge of Chodorow et al. in that the flexible means of the present invention has a greater degree of movement and does not

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require a latch as a locking device.

In conclusion, Maloney and Chodorow together do not render the present invention obvious because the combination of the cited references does not teach or suggest each and every limitation recited in independent claims 22. Maloney and Chodorow together only teach a hinge that has a different operation and lesser range of movement as compared to the present invention. The combination of Maloney and Chodorow does not teach or suggest a flexible means that is integral to the rest of the device, wherein the flexible means is pliable so that the interdental material can be brought laterally to either side of the longitudinal axis of the handling means to have an about 90 degrees angle between the interdental material and the longitudinal axis of the handling means.

In view of the above remarks, Applicants respectfully request that the rejection of claims 22, 24-27 under 35 U.S.C. 103(a) be withdrawn.

A2. Claims 31-38

In the Advisory Action mailed June 4, 2009, the Examiner contended that:

As for the claimed limitation "pliable so that the interdental material can be brought laterally, to either side of the longitudinal axis of the handling means to have an about 90 degrees angle..." , Maloney already discloses such limitation(s).

Applicants respectfully traverse. Applicants submit that the Examiner has failed to provide any evidence that indicates Maloney directly or indirectly teaches the above limitation. Independent claim 31 of the present application recites an apparatus comprising:

a flexible elbow between the cleaning head and the elongated handle, wherein the flexible elbow is integral with the cleaning head and the elongated handle in that the flexible elbow, the cleaning head and the elongated handle are of one construction, and the flexible elbow is pliable so that the interdental material can be brought laterally to either side of the longitudinal axis of the handle to have an about 90 degrees angle between the interdental material and the longitudinal axis of the handle

In contrast, Maloney teaches:

[a]n adjustable connection is formed between head 60 and handle 62 enabling them to be adjusted into various preselected angles ... this adjustable connection includes a small hinge 64 connected between head 60 and handle 62 to enable them to be moved about the hinge pin 66 into a desired angular relationship. Hinge pin 66 is a head screw whose threads are engaged in corresponding threads in the eyes of the hinge so that upon advancement of the hinge pin, the hinge may be secured against movement with the head and handle in the desired relative positions. (*see* column 2, lines 62-75)

Hence, Maloney only teaches the threads of the head screw engage the corresponding threads in the eyes of the hinge so as to secure or fix the angle of the hinge. Maloney does not provide any teaching on the range of movement allowed by such head screw 66 functioning as a hinge pin. More specifically, Maloney does not teach or suggest such hinge pin would allow a 90-degree lateral movement to either side of the handling means as claimed herein. Instead, in view of the teaching that “[h]inge pin 66 is a head screw whose threads are engaged in corresponding threads in the eyes of the hinge so that upon advancement of the hinge pin, the hinge may be secured”, one of ordinary skill in the art would reasonably conclude that such hinge would only allow less than 90-degree lateral movement.

In the Advisory Action mailed June 4, 2009, the Examiner also contended that:

Maloney discloses the flexible means 64/66 substantially as claimed except for the flexible means being of one construction (i.e. monolithically integral) with the teeth cleaning means and the handling means; nevertheless, it would have been obvious to substitute such flexible means 64/66 of Maloney with a well known monolithically integral living hinge ... such as that (22) shown by Chodowrow in Figure 2 ... Such modification is merely a substitution of similar well known interchangeable mechanisms that would yield the same and/or predictable results.

Applicants submit that Maloney does not disclose the flexible means 64/66 substantially as claimed herein. As discussed above, the design and operation of Maloney's hinge are different and distinct from that of the present invention. Maloney teaches a hinge that has a lesser range of movement and requires tightening of screw to fix the angle of the hinge, whereas the flexible means of the present invention has a simpler operating mechanism that allows a greater range of movement.



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Neither do Chodorow et al. teach or suggest a flexible means that would allow 90-degree lateral movement to either side of the handling means as claimed herein. As shown in Figures 5-7, Chodorow teaches a hinge that would only allow at the most 45-degree movement. Furthermore, the hinge of Chodorow et al. would not allow movement to either side of the handling means as claimed herein due to the construction and operation of the hinge. Chodorow's invention requires a projection from the handle that acts as a latch to lock the flosser head in a bent orientation (*see* paragraphs [0010], [0011], [0014]-[0018], and [0059]). As a result, the hinge of Chodorow's device would only permit movement to one, not both, side of the handling means. In other words, the flexible means of the present invention is different and distinct from the hinge of Chodorow et al. in that the flexible means of the present invention has a greater degree of movement and does not require a latch as a locking device.

In conclusion, Maloney and Chodorow together do not render the present invention obvious because the combination of the cited references does not teach or suggest each and every limitation recited in independent claims 31. Maloney and Chodorow together only teach a hinge that has a different operation and lesser range of movement as compared to the present invention. The combination of Maloney and Chodorow does not teach or suggest a flexible elbow that is integral to the rest of the device, wherein the flexible elbow is pliable so that the interdental material can be brought laterally to either side of the longitudinal axis of the handling means to have an about 90 degrees angle between the interdental material and the longitudinal axis of the handling means.

In view of the above remarks, Applicants respectfully request that the rejection of claims 31-38 under 35 U.S.C. 103(a) be withdrawn.

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B. Rejection Under 35 U.S.C. 103(a) over Maloney (U.S. Pat. No. 3,533,420) in view of Chodorow et al. (U.S. Pub. No. 2005/0217692) and Gordon (U.S. Pat. No. 5,184,719)

Claims 28-30 and 39-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maloney (U.S. Pat. No. 3,533,420) in view of Chodorow et al. (U.S. Pub. No. 2005/0217692), and further in view of Gordon (U.S. Pat. No. 5,184,719).

B1. Claims 28-30

Claims 28-30 are dependent on claims 22. Maloney and Chodorow have been discussed above. The Examiner cites Gordon for teaching of guarding means.

As discussed above, Applicants submit that the combination of Maloney and Chodorow does not render claim 22 obvious because Maloney and Chodorow do not teach every limitation of claim 22. Similarly, neither does the combination of Maloney, Chodorow and Gordon teach every limitation of the present invention. Accordingly, Applicants respectfully request that the rejection of claims 28-30 under 35 U.S.C. 103(a) be withdrawn.

B2. Claims 39-41


Claims 39-41 are dependent on claims 31. Maloney and Chodorow have been discussed above. The Examiner cites Gordon for teaching of guarding means.

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As discussed above, Applicants submit that the combination of Maloney and Chodorow does not render claim 31 obvious because Maloney and Chodorow do not teach every limitation of claim 31. Similarly, neither does the combination of Maloney, Chodorow and Gordon teach every limitation of the present invention. Accordingly, Applicants respectfully request that the rejection of claims 39-41 under 35 U.S.C. 103(a) be withdrawn.

Respectfully submitted,

  
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### **VIII. CLAIM APPENDIX**

22. A dental hygiene apparatus, comprising:
- (a) an elongated handling means having a longitudinal axis;
  - (b) a teeth-cleaning means comprising arms that secure one or more lengths of interdental material, wherein the interdental material is oriented longitudinally as related to the longitudinal axis of the handling means; and
  - (c) a flexible means between the teeth-cleaning means and the handling means, wherein the flexible means is integral with the teeth-cleaning means and the handling means in that the flexible means, the teeth-cleaning means and the handling means are of one construction, and the flexible means is pliable so that the interdental material can be brought laterally to either side of the longitudinal axis of the handling means to have an about 90 degrees angle between the interdental material and the longitudinal axis of the handling means.
24. The apparatus of claim 22, wherein said interdental material is dental floss.
25. The apparatus of claim 22, wherein the elongated handling means comprises a tapered portion at one end.
26. The apparatus of claim 25, wherein the tapered portion is chisel-shaped or pointed.
27. The apparatus of claim 22, wherein the teeth-cleaning means is capable of adhering to a new

position after flex adjustment at the flexible means.

28. The apparatus of claim 22, further comprises a guarding means for preventing a user from using the teeth-cleaning means.
29. The apparatus of claim 28, wherein the guarding means comprises a locking device that fits into one or more mating recesses on the teeth-cleaning means.
30. The apparatus of claim 28, wherein the guarding means comprises a thin material that securely covers parts of the teeth-cleaning means and cannot be removed without destruction of said material.
31. A dental hygiene apparatus, comprising:
- (a) an elongated handle having a longitudinal axis;
  - (b) a cleaning head comprising two arms capable of securing one or more lengths of interdental material, wherein the interdental material is oriented longitudinally as related to the longitudinal axis of the handle; and
  - (c) a flexible elbow between the cleaning head and the elongated handle, wherein the flexible elbow is integral with the cleaning head and the elongated handle in that the flexible elbow, the cleaning head and the elongated handle are of one construction, and the flexible elbow is pliable so that the interdental material can be brought laterally to either side of the longitudinal axis of the handle to have an about 90

degrees angle between the interdental material and the longitudinal axis of the handle.

32. The apparatus of claim 31, wherein said interdental material is dental floss.
33. The apparatus of claim 31, wherein the elongated handle comprises a tapered end which is integral with the elongated handle.
34. The apparatus of claim 33, wherein the tapered end is chisel-shaped or pointed.
35. The apparatus of claim 33, wherein the tapered end is pliable so that it can be bent about 90 degrees to the right or to the left.
36. The apparatus of claim 31, wherein the elongated handle comprises ridges, grooves, or a combination thereof.
37. The apparatus of claim 31, wherein the apparatus, in whole or in part, is constructed of a thermoplastic resin.
38. The apparatus of claim 31, wherein the cleaning head is capable of adhering to a new position after flex adjustment at the flexible elbow.

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39. The apparatus of claim 31, further comprises a guarding means for preventing a user from using the cleaning head.
40. The apparatus of claim 39, wherein the guarding means comprises a locking device that fits into one or more mating recesses on the cleaning head.
41. The apparatus of claim 39, wherein the guarding means comprises a thin material that securely covers parts of the cleaning head and cannot be removed without destruction of said material.